[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2021-0117]

Acceptability of ASME Code Section III, Division 5, High Temperature Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Draft regulatory guide; draft NUREG; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing for public comment a draft regulatory guide (DG), DG-1380 (proposed Revision 2 to Regulatory Guide [RG] 1.87), "Acceptability of ASME Code Section III, Division 5, 'High Temperature Reactors'" and accompanying draft NUREG-2245, "Technical Review of the 2017 Edition of ASME Section III, Division 5, 'High Temperature Reactors,'" that documents the NRC staff's review of the 2017 Edition of ASME Section III, Division 5, certain portions of the 2019 Edition, and associated Code Cases N-861 and N-862. This DG describes an approach that is acceptable to the staff of the NRC to meet regulatory requirements for mechanical/structural integrity of components that operate in elevated temperature environments and that are subject to time-dependent material properties and failure modes. It endorses, with conditions, the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code) Section III, "Rules for Construction of Nuclear Facility Components," Division 5, "High Temperature Reactors." The draft NUREG provides the technical basis for DG-1380.

DATES: Submit comments by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only for comments received on or before this date. Although a time limit is given, comments and suggestions in connection with items for inclusion in guides currently being developed or improvements in all published guides are encouraged at any time.

ADDRESSES: You may submit comments by any of the following methods; however, the NRC encourages electronic comment submission through the **Federal Rulemaking Website**:

- **Federal Rulemaking Website:** Go to https://www.regulations.gov and search for Docket ID **NRC-2021-0117**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; e-mail: Stacy.Schumann@nrc.gov. For technical questions, contact the individuals listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- **Mail comments to:** Office of Administration, Mail Stop: TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Program Management, Announcements and Editing Staff.

For additional direction on obtaining information and submitting comments, see "Obtaining Information and Submitting Comments" in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Jeffrey Poehler, Office of Nuclear Regulatory Research, telephone: 301-415-8353, e-mail: Jeffrey.Poehler@nrc.gov, Robert Roche-Rivera, Office of Nuclear Regulatory Research, telephone: 301-415-8113, e-mail: Robert.Roche-Rivera@nrc.gov, and Jordan Hoellman, Office of Nuclear Reactor Regulation, telephone: 301-415-5481, e-mail: Jordan.Hoellman2@nrc.gov. All are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID **NRC-2021-0117** when contacting the NRC about the availability of information for this action. You may obtain publicly available information related to this action by any of the following methods:

- **Federal Rulemaking Website:** Go to https://www.regulations.gov and search for Docket ID **NRC-2021-0117**.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at https://www.nrc.gov/reading-rm/adams.html. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.

- **Attention**: The PDR, where you may examine, and order copies of public documents, is currently closed. You may submit your request to the PDR via e-mail at pdr.resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8:00 a.m. and 4:00 p.m. (ET), Monday through Friday, except Federal holidays.

B. Submitting Comments

The NRC encourages electronic comment submission through the **Federal Rulemaking Website** (https://www.regulations.gov). Please include Docket ID **NRC-2021-0117** in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at https://www.regulations.gov as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submissions. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

II. Additional Information

The NRC is issuing for public comment a draft guide in the NRC's "Regulatory Guide" series. This series was developed to describe methods that are acceptable to the NRC staff for implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific issues or postulated events, and to describe information that the staff needs in its review of applications for permits and licenses.

This proposed Revision 2 to RG 1.87, entitled "Acceptability of ASME Code Section III, Division 5, 'High Temperature Reactors,'" is temporarily identified by its task number, DG-1380 (ADAMS Accession No. ML21091A276). The staff is also issuing for public comment a draft regulatory analysis (ADAMS Accession No. ML21091A277), and draft NUREG-2245, "Technical Review of the 2017 Edition of ASME Section III, Division 5, 'High Temperature Reactors,'" (ADAMS Accession No. ML21223A097) that documents the NRC staff's review of the 2017 Edition of ASME Section III, Division 5, certain portions of the 2019 Edition, and associated Code Cases N-861 and N-862. Code Cases N-872 and N-898 ("the Alloy 617 Code Cases"), approved by ASME in 2020, are not included in this review and are being considered for endorsement in a parallel effort.

The NRC published Revision 1 of RG 1.87, "Guidance for Construction of Class 1 Components in Elevated-Temperature Reactors," in June 1975 to provide licensees and applicants with agency-approved guidance for complying with paragraph 50.55a of title 10 of the *Code of Federal Regulations* (10 CFR) "Codes and standards," and General Design Criterion 1, "Quality Standards and Records." The guide described interim licensing guidelines to aid applicants in implementing these requirements with respect to ASME Class 1 components operating at elevated temperatures. Specifically, the guide approved, with conditions, the initial versions of five Code Cases namely, Code Cases 1592-0, 1593-0, 1594-0, 1595-0, and 1596-0. These five Code Cases are the precursors to the other iterations of ASME's high temperature construction rules: Code Cases N-47 through N-51; ASME Code, Section III, Subsection NH; and currently

ASME Code, Section III, Division 5. The current version of RG 1.87 (Revision 1) does not reflect the changes and updates with respect to modern design, fabrication, inspection, testing, and overpressure provisions (among others) addressed by the aforementioned Code iterations, research, and operating experience.

This revision (Revision 2) updates the guidance to endorse, with conditions, the 2017 Edition of ASME Code Section III, Division 5, as a method acceptable to the staff for the materials, mechanical/structural design, construction, testing, and quality assurance of mechanical systems and components and their supports of high-temperature reactors. This revision of the guide also addresses the acceptability of the Code Cases N-861 and N-862, which are related to Division 5 of the ASME Code, Section III. Draft NUREG-2245 provides the technical basis for NRC staff positions stated in the DG, including proposed exceptions and limitations on the use of Division 5. Additionally, this revision adds an appendix to the RG namely Appendix A, “High Temperature Reactor Quality Group Classification,” which provides guidance for the quality group classification of components in non-light water reactor designs.

III. Backfitting, Forward Fitting, and Issue Finality

DG-1380 and NUREG-2245, if finalized, would not constitute backfitting as defined in 10 CFR 50.109, “Backfitting,” and as described in NRC Management Directive (MD) 8.4, “Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests” (ADAMS Accession No. ML18093B087); constitute forward fitting as that term is defined and described in MD 8.4; or affect the issue finality of any approval issued under 10 CFR part 52, “Licenses, Certificates, and Approvals for Nuclear Power Plants.” The guidance would not apply to any current licensees or applicants or existing or requested approvals under 10 CFR part 52, and therefore its issuance cannot be a backfit or forward fit or affect issue finality. Further, as explained in DG-1380, applicants and licensees would not be required to comply with the positions set forth in DG-1380.

Dated: August 17, 2021.

For the Nuclear Regulatory Commission.

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